BY ORDER OF THE COMMANDER
HILL AIR FORCE BASE (AFMC)

HILL AFB INSTRUCTION 48-105

8 NOVEMBER 1999

Aerospace Medicine

BASE RADIATION SAFETY PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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OPR: 75 AMDS/SGPB (Maj Chandler)

Certified by: 75 AMDS/SGPB
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This instruction implements *AFPD 48-1, Aerospace Medical Program.* This instruction prescribes the precautionary measures and procedures for requisitioning, handling, storing, using, and disposing of radioactive materials and ionizing and non-ionizing radiation producing machines. It applies to all Hill AFB personnel, contractors, and tenant organizations on Hill AFB and other operating locations controlled by Hill AFB using radioactive material or radiation producing machines.

This instruction directs collecting and maintaining information subject to the Privacy Act of 1974, authorized by 10 U.S.C. 8013 and *DODI 6055.8, Occupational Radiation Protection Program.* System of records notice F161 AF SGC applies.

SUMMARY OF REVISIONS

Paragraphs 7.1. 7.1.1, 7.1.2, 7.1.3, 7.2, 8.5 - 8.7, 9.1, 9.1.2, 9.2 - 9.4, 10.1.1.4, 10.2 - 10.9, and attachments 4 - 8 are new additions to this instruction. A (|) indicates a revision from the previous edition.

1. INTRODUCTION. The control of ionizing and non-ionizing radiological health hazards by the Bioenvironmental Engineering Flight (75 AMDS/SGPB) is directed toward safeguarding the health of persons working or living in the vicinity of Hill AFB. The effectiveness of the program depends on the personnel responsible for organizing and implementing the program. Specifically needed are the consistent and conscientious efforts practiced by the individual who uses, and the supervisor who guides the use of materials or machines producing ionizing and non-ionizing radiation.

2. REFERENCES. Radiation Protection References (Attachment 1).

3. TERMS EXPLAINED.

3.1. As low as reasonably achievable (ALARA) concept. ALARA is defined as that set of management and administrative actions taken to reduce personnel ionizing radiation exposure to as low a level as possible consistent with existing technology, costs, and operational requirements.

3.2. Controlled area. Any area in which radioisotopes are used or stored and access to which is controlled for the protection of individuals from exposure to radiation. In the case of non-ionizing radiation, controlled areas are those that may be occupied by personnel who accept potential exposure as concomitant of employment or duties; by individuals who knowingly enter areas where levels above the permissible exposure limits (PEL), defined in *AFOSHSTD 48-9, Radio Frequency Radiation (RFR) Safety Program,* are to be expected; and by personnel passing through such areas.

3.3. Electromagnetic radiation. A term used to mean non-ionizing radiation in the frequency range from about 10 kilohertz (kHz) to 300 gigahertz (GHz).

3.4. Ground-level hazard emitter. Systems capable of producing power density levels at or above the PEL in areas accessible to personnel at or near ground level.

3.5. Microcuries. One-millionth of a curie. A curie is a term that designates a quantity of radioactive material present. It is the amount of radioactive material that disintegrates at the rate of 37 billion atoms per second.

3.6. Millirem. One-thousandth of roentgen equivalent man (rem). A rem is a unit of absorbed radiation by man. Radiation standards are normally expressed in millirem (mrem) or rem per unit of time.

3.7. Non-hazardous emitter. Low-power devices, as described in *AFOSHSTD 48-9,* that are not maintained within 2.5 cm of the body.

3.8. Potentially hazardous emitter. RFR emitters which do not fit the criteria for low-power devices (non-hazardous emitters) and are capable of producing levels at or in excess of the PELs given in *AFOSHSTD 48-9.*

3.9. Probe surveys. Measurements using portable survey meter to detect alpha, beta, gamma, neutrons, or x-ray radiation.

3.10. Radiation area. An area in which an individual could receive a radiation dose to a major portion of the body of 5 mrem or more in any one hour. Thermoluminescent badges and self-reading pocket dosimeters will be worn in radiation areas.

3.11. Radiation dosimeter program. A program described in *AFI 48-125, The US Air Force Personnel Dosimetry Program,* for routinely monitoring personnel who work with radiation producing devices and who are likely to receive radiation doses in excess of one-tenth of the applicable radiation standard.

3.12. Restricted area. An area having access limited to protect individual against undue risks from exposure to radiation or radioactive material.

3.13. Roentgen (R). A unit of measure of x-ray or gamma radiation in air. Specifically, that amount of x-ray or gamma radiation which produces a charge of 2.58 X 10-4 coulomb per kg air.

3.14. Self-reading pocket dosimeter. A radiation detection device normally worn by an individual and designed to detect and quantitatively measure x-ray and gamma radiation. These dosimeters are not as accurate as thermoluminescent dosimeters (TLD), but they are read by the wearer and give a

good indication of the radiation dose received by the wearer. These devices are not to be worn alone. They are to be worn while wearing TLDs.

3.15. Swipe samples. Samples using filter paper to detect removable radioactive material. Filter paper is smeared across suspected contaminated areas.

3.16. TLD. A radiation detection device normally worn by an individual and designed to detect and quantitatively measure beta, gamma, x-ray, and, if required, neutron radiation. These dosimeters are read by the USAF Center for Radiation Dosimetry (formerly Armstrong Lab and Det 1, HSC/OEBD) at Brooks AFB, TX.

4. RESPONSIBILITIES.

4.1. OO-ALC Commander (OO-ALC/CC) will appoint the Base Radiation Safety Officer (RSO).

4.2. The Medical Group Commander (75 MDG/SG) will:

4.2.1. Initiate, supervise, and execute the Hill AFB Radiation Safety Program.

4.2.2. Have final approval authority for laser operations.

4.2.3. Implement and conduct a medical program designed to evaluate personnel Radio Frequency (RF) radiation hazards.

4.3. The Base RSO is directly responsible to the 75 AMDS/SGPB Chief on all professional radiological health protection matters and will:

4.3.1. Enforce the rules and regulations stated on all current licenses which list the base and permit RSOs.

4.3.2. Exercise authority to terminate operations when imminent danger exists.

4.3.3. Be responsible for implementing the ALARA concept.

4.3.4. Provide the Fire Chief with a list of facilities containing radioactive commodities that are deemed potential hazards during fire fighting.

4.3.5. Develop procedures to assess permit compliance. ***NOTE:*** If organizations are in noncompliance, the Base RSO has the responsibility to advise OO-ALC/CC, Air Force Materiel Command Bioenvironmental Engineer (HQ AFMC/SGCR), HQ Air Force Medical Operations Agency Air Force Radioisotope Committee (HQ AFMOA/SGOR), and user senior management as appropriate. HQ AFMOA/SGOR or Nuclear Regulatory Commission (NRC) have the authority to revoke the permit.

4.3.6. Monitor the base radiation dosimetry program, obtaining from female employees on Radiationdosimetry Programs signed statements indicating that they understand their responsibility to notify their supervisor immediately if they become pregnant (Attachment 2). Provide initial information to all fertile women subject to occupational ionizing radiation exposure (Attachment 3).

4.3.7. Monitor areas and environmental radiation hazards.

4.3.8. Provide technical advice on emergency procedures (in the event of spills, explosions, or fire involving radioactive materials).

4.3.9. Review plans for proposed radiation usage.

4.3.10. Perform radiation protection surveys.

4.3.11. Recommend instrumentation related to radiation detection.

4.3.12. Provide technical advice on the receipt, shipment, transfer, and disposal of radioactive materials (Attachment 4).

4.3.13. Monitor waste disposal control measures.

4.3.14. Maintain an inventory of all base activities using, storing, or handling radioactive material, x-ray emitters, and lasers. Maintaining an inventory of all RF emitters is also recommended.

4.3.15. Conduct an annual briefing to senior permit manager (named on the permit) and provide a summary of the briefing.

4.4. Supervisors of units which have ionizing (radioactive materials, x-ray emitters, etc.) and non-ionizing radiation (RF emitters, lasers) sources will, when applicable:

4.4.1. Enforce the rules and regulations stated on all current licenses for radioactive materials which list the permit and Base RSOs.

4.4.2. Be responsible for implementing the ALARA concept when dealing with ionizing radiation.

4.4.3. Immediately notify the Base RSO or alternate Base RSO of any equipment, personnel, or procedural changes regarding ionizing or non-ionizing radiation.

4.4.4. Enforce all health and safety publications relative to the safe handling of all radioactive materials and machines producing ionizing and non-ionizing radiation.

4.4.5. Ensure all necessary safety equipment (such as shields, hoods, protective clothing, instruments, and long-handled tongs) is available and used by personnel working with radiation sources.

4.4.6. Ensure the Base RSO or alternate Base RSO is notified immediately whenever personnel listed on the radioactive permit are changed.

4.4.7. Conduct inspections necessary to ensure that all safety equipment is operative and in a good state of repair.

4.4.8. Indoctrinate new employees, within the first eight-hours prior to assignment to such duties, in the principles of radiation safety; to include proper wear and storage of all dosimeters. Immediately notify Occupational Medicine (75 AMDS/SGPFO) and 75 AMDS/SGPB of assignment of fertile women to work involving ionizing radiation.

4.4.9. Ensure all radiological health emergencies are reported to the Base RSO.

4.4.10. Be responsible for the safety of workers in any radiation environment, including preoperative checks of safety equipment; for example, monitoring instruments, hood flow, eye shields, and interlocks.

4.4.11. Prepare a written Radiological Health and Safety Operating Instruction (OI) in coordination with the Base RSO and send one copy to the Ground Safety Office (OO-ALC/SEG). Provide other copies as required. These instructions will also include emergency procedures.

4.4.12. Be alert for equipment failure or malfunction or improper safety procedures by personnel, which may result in excessive radiation exposure of personnel.

4.4.13. When applicable, maintain and comply with the radioactive material permit. Keep a record of the radioactive material within the area of supervision and send a copy to 75 AMDS/SGPB.

4.4.14. By written request to 75 AMDS/SGPFO, ensure personnel are given pre-employment physicals prior to assignment to duties involving laser radiation and request termination physicals when no longer in radiation area.

4.4.15. Order, maintain, and operate radiation-measuring equipment necessary to ensure compliance with federal standards.

4.5. While in radiation areas, each individual is responsible for proper storage and wearing of personnel monitoring devices and any protective equipment required by the RSO.

4.6. 75 AMDS/SGPFO will:

4.6.1. Give pre-employment and termination physical examinations to all persons assigned to duties involving potential exposure to laser radiation as required by *AFOSHSTD 161-10, Health Hazards Control for Laser Radiation.*

4.6.2. Conduct special examinations and clinical tests as required.

4.7. Public Health Flight (75 AMDS/SGPM) will:

4.7.1. Facilitate necessary education of personnel occupationally exposed to radiation.

4.7.2. Document education and training in accordance with ALARA and *Air Force Instruction 48-145, Occupational Health Program.*

4.8. Civilian Personnel Office (OO-ALC/DPC) and Military Personnel Flight (75 MSS/DPM) will effect temporary reassignment of civilian and military pregnant females occupationally exposed to ionizing radiation when reassignment is recommended by medical personnel.

4.9. Contractors will abide with *AFI 40-201, Managing Radioactive Materials in the USAF,* to include notifying the RSO before they bring new sources on base.

5. PERSONNEL DOSIMETRY PROGRAM.

5.1. Requests for dosimeter service will be completed before assigning personnel to duties in ionizing radiation areas. The area supervisor will have the individual report to 75 AMDS/SGPB. When personnel are removed from the radiation areas, the supervisor will submit a written request to 75 AMDS/SGPB discontinuing dosimeter service. A termination physical examination will be requested by 75 AMDS/SGPB from 75 AMDS/SGPFO if appropriate.

5.2. The wearing of dosimeters will be as follows:

5.2.1. TLDs issued by 75 AMDS/SGPB will be worn by all workers entering a radiation area. Supervisors or designated personnel for each work section that requires the use of TLDs will take TLDs to Building 249 for periodic exchange or will arrange to have them collected by 75 AMDS/SGPB.

5.2.2. TLDs will be worn on the part of the body most likely to receive the greatest exposure to radiation.

5.2.3. Never place the badge inside the pocket or behind cloth, cigarettes, coins, or any personal obstruction whatsoever.

5.2.4. Supervisors must tell personnel that at no time should they tamper with TLDs. If these devices are accidentally damaged or exposed, the wearer must immediately return them to 75 AMDS/SGPB and exchange them for new ones. The wearer will explain the nature of the accident to aid in evaluation of the TLD.

5.2.5. Personnel working with industrial x-ray equipment or adjacent to high radiation areas will wear two self-reading pocket dosimeters or one digital alarm dosimeter (DAD) as prescribed by the RSO. This will permit frequent reading of the dosimeters during hazardous procedures. Pocket dosimeters should be worn clipped on the breast pocket of the outer garment. Never place dosimeters behind dense material such as coins or other metallic objects in the pocket.

5.2.6. When visitors enter a radiation area, they are required to register with the supervisor before entry. The supervisor will issue pocket dosimeters to the visitor and maintain *AFTO Form 115, Pocket Dosimeter Results Log*, with the visitor's name, address, date, time in and out, pocket dosimeter or DAD number, and the initial and final readings on the pocket dosimeter/DAD. The RSO will designate those areas and circumstances in which TLDs must be worn by visitors in addition to the pocket dosimeter/DAD.

6. PROCUREMENT PROCEDURES.

6.1. All requests for radiation producing materials or equipment will be submitted to 75 AMDS/SGPB for review and approval.

6.2. Exempt quantities of radioactive materials (specified in *Code of Federal Regulations (CFR), Title 10, Energy*) need not be submitted to 75 AMDS/SGPB. Contact the Base RSO for guidance.

6.3. Submit requests for new machines producing ionizing radiation to 75 AMDS/SGPB for approval.

6.3.1. The user will prepare a letter of justification and supporting documentation indicating the materials or equipment desired.

6.3.2. Requests to 75 AMDS/SGPB will include, as a minimum, the following information:

6.3.2.1. Name, title, organization, and telephone number of user.

6.3.2.2. Names, titles, and organizations of all personnel who will regularly use the material or equipment.

6.3.2.3. Exact locations where the material or equipment will be kept.

6.3.2.4. Brief outline or procedure to be followed and any other special requirements.

6.4. The application will not be approved if:

6.4.1. It is determined that the applicant is not equipped to observe the health and safety standards established by the NRC, 75 MDG/SG, or the criteria established within the NRC licenses applicable to the material or equipment involved.

6.4.2. It is determined that the applicant is not qualified to use radioisotopes or the equipment for the purpose requested.

6.4.3. Past records indicate that the applicant has neglected to observe necessary health and safety standards resulting in over exposure or injury.

6.5. The Base RSO may forward, to higher headquarters at the request of the applicant, applications that are controversial in nature and cannot be resolved at base level.

6.6. The Base RSO will return the application, including any recommended changes, to the applicant for final preparation and procurement, provided the radioisotope can be procured under the possession limits as specified in the applicable USAF Permit.

6.7. Users will submit an application for amendments to 75 AMDS/SGPB. Radioisotopes may not be procured until the applicant has received written approval from the Base RSO.

7. RECEIPT.

7.1. Defense Depot Hill Utah (DDHU) of the Defense Logistics Agency (DLA) will accept "A" or "F" condition code (serviceable/repairable) radioactive material (RAM) in Central Receiving, Bldg 849, West Dock. In general, radioactive items in condition codes H, P, or R are considered excess radioactive materials/waste and will not be stored by DDHU. Upon receipt and identification of RAM, a Radiation Health Monitor (RHM), Radiation Protection Officer (RPO), or Alternate RPO, will perform the tasks in accordance with DDHU's most current Radiological Health Implementation Procedures (RHIP) RHIP-HU-1, Rev-0, *Radioactive Materials Receipt and Storage Procedures* and in accordance with Title 10 Code of Federal Regulations (10 CFR 20.1906).

7.1.1. Permitted/Licensed RAM. DDHU RPO, ARPO, or RHM shall conduct a radiation survey of the RAM and complete DDRW Form 359, *Radioactive Material Movement Form*, or equivalent form. If the RAM is permitted or licensed, contact the base Radiation Safety Officer (RSO) in Bioenvironmental Engineering (75 AMDS/SGPB), to verify that the recipient is authorized to receive the RAM before it is transferred to the recipient. If the recipient is not authorized to receive the RAM, the RAM shall be returned to the sender with an explanation from the base RSO that the recipient was not authorized to receive the material. If unsure whether RAM is permitted/licensed, contact the base RSO.

7.1.2. A or F Condition RAM. Receipt procedures will be in accordance with the most current RHIP-HU-1for radioactive materials receipt. If RAM is received at locations other than Bldg 849, the DDHU RPO shall be notified immediately when RAM has not been properly received through Bldg 849, Central Receiving. The DDHU RPO or RHM shall perform tasks as described in the most current RHIP-HU-1.

7.1.3. Other than A or F Condition RAM. RAM determined to be other than A or F condition will not be stored in Bldg 845 unless approved by the DDHU RPO. The RPO or RHM shall conduct a survey of the package to verify that the package is in good condition. DDRW Form 359, *Radioactive Material MovementForm*, or equivalent form, will be completed and attached to the outer box of the RAM. The RAM will be transferred directly to Bldg 830, Bay B with the *Radioactive Material Movement Form*, for storage awaiting disposal/recycle. 75 ABW/LGSCR shall be notified before bringing the RAM to Bldg 830, Bay B. 75 ABW/LGSCR and the base RSO (75 AMDS/SGPB) will add the RAM to the current inventory and store it in Bldg 830, Bay D.

7.2. Attachment 5 is a flowchart displaying RAM receipt procedures.

8. STORAGE.

8.1. Store all radioactive materials in safe and secure locations to prevent removal by unauthorized personnel. All machines producing ionizing radiation may be stored in convenient locations provided they are in a configuration to preclude inadvertent operation.

8.2. Radioactive material or items will be stored in accordance with T.O. 00-110N-3, *Requisition, Handling, Storage, and Identification of Radioactive Material.*

8.3. Authorized shipping containers for radioactive material may be used for storage provided the shielding is adequate (reference T.O. 00-110N-3).

8.4. Confine shipping and storage containers to the designated storage area, even when empty. Using organizations will monitor these containers for surface contamination each time the source is removed from them or at such times as indicated by the base RSO. The presence of contamination in amounts greater than the allowable limits (T.O. 00-110N-2, *Radioactive Waste Disposal*) will be reported to the base RSO.

8.5. Storage of RAM in Bldg 845, DDHU, will be conducted in accordance with RHIP-HU-1, Rev-0. When RAM is received in Bldg 845, Bay G, the storage RHM will place the material in the designated RAM storage area. Bldg 845 is the only authorized, long-term storage area. The DDHU RPO may establish other temporary storage locations as necessary to accommodate abnormally large receipts. H, P, or R condition code RAM may be temporarily stored in Bay G as determined by the RPO in coordination with the base Radiation Safety Officer (RSO) from Bioenvironmental Engineering.

8.6. Surveys at DDHU will be conducted in accordance with the most current DDRW *Radiation Protection Program* and the RHIP-RW-2. A location survey shall be conducted monthly by the Inventory/Integrity Branch, DDHU-XI, to ensure all RAM is located in the RAM storage area. A physical inventory will be conducted by DDHU-XI bi-annually of all RAM.

8.7. Excess RAM will be processed through Bldg 830, Bay B. However, the RAM storage area is located in Bldg 830, Bay D. RAM in Bldg 830, Bay D shall be secured/locked and not stored with other hazardous materials. Only authorized personnel are allowed access to the storage area. The storage area shall be posted with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION RADIOACTIVE MATERIAL, Section 206 of the Energy Reorganization Act of 1974, Nuclear Regulatory Commission (NRC) Form 3 *Notice to Employees*, and emergency contacts list. Surveys of the storage area shall be conducted at least annually and more frequently if deemed necessary by the base RSO. 75 ABW/LGSCR personnel working with the RAM will receive initial and annual refresher radiation safety training. The base RSO will coordinate with 75 ABW/LGSCR personnel to ensure the training is accomplished.

9. SHIPMENT:

9.1. Users, or designated representatives, of licensed/permitted radioactive materials must coordinate with the base RSO, or alternate base RSO, 75 AMDS/SGPB, Bioenvironmental Engineering Flight (Bio) in Bldg 249 before any radioactive materials are shipped off Hill AFB. Persons responsible for permitted radioactive material may not transfer such material to another person or organization except as provided in the applicable portions of the USAF radioactive material permit and in accordance with *AFI 40-201*. Contact the base RSO for coordination and assistance.

9.1.1. Other transfers. An individual or organization must notify the base RSO before transferring radioactive materials or machines producing ionizing radiation that are not subject to regulation by a USAF radioactive material permit or the Nuclear Regulatory Commission.

9.1.2. Users will fill out a *DD Form 1149, Requisition and Invoice/ Shipping Document*, when turning in RAM for shipment off base. Instructions for filling out the *DD Form 1149* are available through the Shipment Planning Branch, DDHU-TH, in Bldg 849. The base RSO from Bioenvironmental must coordinate on the *DD Form 1149* before the RAM and the form are forwarded to the Packaging Branch (DDHU- T) in Bldg 849 for packaging, labeling, and shipment.

9.2. DDHU-T and DDHU's RPO, or alternate RPO, will ensure the RAM is packaged, labeled and shipped in accordance with RHIP-HU-2, Rev-0, *Radioactive Materials Issue, Packaging, Shipping* and Title *49 Code of Federal Regulations (49 CFR)* and *Title 10 CFR, Part 71, Packaging Radioactive Materials for Shipment.*

9.3. DDHU's RPO will conduct survey and documentation procedures for the RAM in accordance with RHIP-HU-2, Rev-0. A copy of the completed *Radioactive Material Movement Form,* or equivalent form, will be forwarded to the base RSO in Bldg 249. Transfer documents (either receipt or shipment papers) of RAM and the *Radioactive Material Movement Form* must be maintained for a minimum of 3 years by the base RSO and by the users/owners of the RAM.

9.4. Attachment 6 is a flowchart displaying RAM shipment procedures.

10. DISPOSAL / RECYCLE.

10.1. The collection, segregation, and handling of radioactive wastes in the facilities will be performed by the personnel of the area in which the waste originated. The area supervisor will keep inventory records of the type of radioactive material in each waste container. Waste containers will be marked with labels bearing the radiation symbol and the words "RADIOACTIVE MATERIAL," and tagged to indicate the nature of the contents. Each directorate or staff office will maintain serialized control (with number sequence controlled at a central point) of each waste container and a log stating the location and number of each container. Each organization maintaining radioactive containers will submit certification that is material is being controlled in accordance with existing waste monitoring. The supervisor will report any lost or misplaced container immediately to the base RSO or alternate base RSO. Under no circumstances will one using organization accept radioactive waste from another without written concurrence from the base RSO.

10.1.1. Using organizations will:

10.1.1.1. Dispose of radioactive waste in accordance with procedures outlined in T.O. 00-110N-2.

10.1.1.2. Attach radiation warning labels bearing the radiation symbol and the words, "RADIOACTIVE MATERIAL," to the container. The labels will be affixed so that at least one is visible from any direction of approach.

10.1.1.3. Be responsible for monitoring the containers for radiation intensity build up and taking swipe samples to determine if there is any removable contamination.

10.1.1.4. Forward waste information as listed in T.O. 00-110N-2 to the base RSO.

10.2. Excess Permitted/Licensed RAM. Excess RAM that is permitted or licensed will not be shipped to Bldg 830 for disposal or recycle unless approved by the base RSO. On-base owners and users of permitted RAM will contact the base RSO for approval to dispose or recycle their sources in Bldg 830. After approval for disposal or recycling by the base RSO, owners and users must submit a completed DD Form 1348, *Issue Release/Receipt Document*, with the RAM when processing the RAM through Bldg 830, Bay B. Before bringing the RAM to Bldg 830, contact 75 ABW/LGSCR for coordination. Permitted or licensed RAM received from off-base sources will not be disposed or recycled unless approved by the base RSO.

10.3. Non-Permitted RAM. On-base owners or users that want to dispose or recycle their non-permitted excess RAM must submit a completed *DD Form 1348, Issue Release/Receipt Document*, with the RAM when taking the RAM to Bldg 830, Bay B. Before bringing the RAM to Bldg 830, contact 75 ABW/LGSCR for coordination. Non-permitted excess RAM received by DDHU in Bldg 849 from off-base sources shall be surveyed and a *Radioactive Material Movement Form*, or equivalent form, completed. Transfer of the RAM can then be coordinated with 75 ABW/LGSCR, Bldg 830, Bay B for storage awaiting disposal or recycling. Any RAM sent to DDHU should not be accepted unless it has the appropriate information with it.

10.4. The following information (i.e. on *DD Form 1348*) must accompany RAM sent to Bldg 830:

10.4.1. Name and organization of person turning in

10.4.2. Building number and date turning in

10.4.3. Item name/description

10.4.4. National stock number *(if available)*

10.4.5. Part number/model number

10.4.6. Quantity of each item

10.4.7. Radioactive material *(i.e Tritium, Cs-137, Ra-226, etc.)*

10.4.8. Radioactivity *(i.e. 10 mCi, 5 microcuries, 100 nCi, 3 uCi, etc.)*

10.5. Excess RAM will be inventoried and stored in Bldg 830 until disposed or recycled. If items are too large or there is limited space, then items can be temporarily stored in Bldg 849 with coordination from DDHU's RPO. A current inventory of the RAM will be maintained by the base RSO with assistance from 75 ABW/LGSCR personnel. Items will not be placed in Bldg 830 without approval from 75 ABW/LGSCR and/or the base RSO.

10.6. No RAM will be sent to the Defense Reutilization Marketing Office (DRMO). The radioactive source of an item will be safely removed from the item before the item is turned in to DRMO. The radioactive source WILL NOT be turned in to DRMO, but will be turned in to Bldg 830, Bay B for disposal or recycling. Information required for turn-in of the source to Bldg 830 is the same as listed on the *DD Form 1348.* Individuals trained in the safe removal of the source will only accomplish removal of the source from the item. If you do not know how to remove the source safely, contact the base RSO or alternate RSO for assistance.

10.7. The base RSO will arrange for disposal of RAM with the Institute of Risk Analysis Radiation Surveillance Division, Health Physics Branch, Air Force Radioactive and Mixed Waste Office or IERA/SDRH (AFRMWO), 2402 E. Drive, Brooks AFB, TX 78235-5114. The IERA/SDRH office

will provide disposal instructions. Disposal will be arranged periodically, with attempts to remove items annually, if sufficient amount of RAM is awaiting disposal and funds are available.

10.8. For recyclable RAM, the base RSO will arrange with the Wright-Patterson AFB Radioactive Material Recycling Facility, 88 ABW/EMB, 5490 Pearson Road, Wright-Patterson AFB, OH 45433-5332. Recycling RAM will be arranged periodically, depending upon the amount of material for recycling and available funds.

10.9. Attachments 7 and 8 are flowcharts displaying the RAM disposal/recycle procedures.

11. SURVEYS.

11.1. The Base RSO or delegated alternate will conduct routine surveys and schedule shielding surveys. The RSO will conduct special surveys at the request of using organizations. For these special surveys, contact 75 AMDS/SGPB by telephone and follow up with a written request.

11.2. Types of surveys are:

11.2.1. Probe surveys which use portable survey meters to detect alpha, beta, gamma, neutrons, or x-rays.

11.2.2. Swipe sample surveys which use filter paper to smear suspected contaminated areas.

11.2.3. Evaluation of procedures, materials, and documentation.

12. LEAK TESTING SEALED SOURCES.

12.1. Each sealed source acquired from another person or organization, (containing by-product material or any other radioactive material with a half-life greater than 30 days and in any form other than gas) will be tested for contamination and leakage before use.

12.2. In the absence of a certificate from a transfer indicating that a test had been made within six months prior to the transfer, the sealed source will not be put in use until tested.

12.3. The test will be capable of detecting the presence of 0.005 microcuries or more of radioactive material on the test sample.

12.4. Unless otherwise specified, the permittee is responsible for swipe sampling as specified; or, if not specified, the surfaces of the device in which the sealed source is permanently or semi-permanently mounted or stored where one might expect contamination to accumulate will be swiped. Use filter paper as required to swipe the source. Depending upon the type and quantity of radioactive material being tested; tweezers, hemostats, or other remote handling devices will be used to hold the swipe sample during the swipe. Forward by mail the leak test swab or filter paper in an enclosed envelope to the Det 1, HSC/OEBA, 2402 E Drive, Brooks AFB TX 78235 for analysis.

12.5. Each sealed source which the permittee uses (containing by-product material or any other radioactive material with a half-life greater than 30 days and in any form other than gas) will be tested for leakage and contamination at intervals of six months, unless otherwise specified in the permit. Exception - each sealed source designed for the purpose of emitting alpha particles will be tested at intervals of three months.

12.6. If the above tests reveal the presence of 0.005 microcuries or more of removable contamination, the permittee will immediately withdraw the sealed source from use and arrange for it to be decontam-

inated and repaired or disposed of in accordance with the waste disposal procedure contained in the permit or in accordance with the CFR.

12.7. Sources are to be leak tested before going to storage and before being taken out of storage.

13. EMERGENCY PROCEDURES.

13.1. Emergencies include any unusual occurrences that result in contamination of facilities or environment, or that may result in the exposure of personnel to hazardous levels of ionizing or non-ionizing radiation. 75 AMDS/SGPB must be notified immediately of all these emergencies. 75 AMDS/SGPB, in turn, will notify the AFGE Local 1592 health and safety representative of the emergencies.

13.2. 75 AMDS/SGPB will be directly involved with all investigations and reporting of accidents and incidents involving radioactive materials. All reporting and investigations will be per the applicable sections of *AFI 91-202, The US Mishap Prevention Program; AFI 91-204, Safety Investigations and Reports; AFI 40-201;* and TO 00-110N-3. Reporting under *AFI 91-204* does not negate the reporting requirements of *AFI 40-201* and the NRC. Criteria for reporting an incident or accident under the code name ***faded giant*** can be found in *AFI 40-201* and *AFI 91-204.*

13.3. Treat any radioactive material spill as a major spill until monitoring can be accomplished to determine the actual intensity of the radiation exposure.

13.4. Fire fighting procedures are as follows:

13.4.1. The fighting of fires, which may occur in buildings, must be accomplished in such a manner that exposure of personnel to radiation is held to a minimum and the spread of radioactive contamination is avoided. The supervisor will forward to the Fire Protection Branch (75 CEG/CEF) a set of floor plans showing the locations of radiation areas and isotope storage areas.

13.4.2. As a general rule, when using fire hoses, water fog is preferable to solid stream application to avoid excessive runoff of water that may spread contamination.

13.4.3. If a fire breaks out, sound the evacuation alarm, call 911, and notify 75 AMDS/SGPB of its location. If no immediate radiation hazard exists and the potential for sustaining injuries is remote, combat the fire using the nearest fire extinguisher, sand, or water. If there is sufficient time, personnel who are using isotopes and are not in the fire area should quickly place their isotopes into storage containers, transport containers from the area, then close the windows and doors, and shut off the ventilation system before leaving the area.

13.4.4. Firefighters must wear protective clothing and respiratory equipment even though there is no evidence of immediate radiation danger. If possible, fire fighting should be conducted from the upwind side of the blaze.

14. INGESTION OR INHALATION OF RADIOACTIVE MATERIAL.

14.1. A person who ingests radioactive material should be transported immediately to the base clinic and 75 AMDS/SGPB notified of the incident.

14.2. A person who has inhaled radioactive material should be removed to an uncontaminated area immediately. The patient should be transported to the base clinic for medical treatment and 75 AMDS/SGPB notified of the incident.

15. LASER SAFETY PROCEDURES.

15.1. Before starting any operation involving laser operations, adequate safe operating procedures will be developed. 75 AMDS/SGPB will inspect the operation area for hazards. All work with lasers will be done in accordance with *AFOSHSTD 161-10*. 75 AMDS/SGPB will have final approval authority for laser operations.

15.2. The using activity will, when requesting approval of laser operations before procurement:

15.2.1. Prepare a safety OI for the laser and forward it to 75 AMDS/SGPB. The OI will contain the following information, as a minimum:

Safety requirements.

15.2.1.1. Personal hazards including safe eye exposure distance.

15.2.1.2. Location.

15.2.1.3. Sequence of operations.

15.2.1.4. Individual (name) assigned as laser safety officer.

15.2.2. Send the following information to 75 AMDS/SGPB:

15.2.2.1. Location (building and room number).

15.2.2.2. Type of laser.

15.2.2.3. Wavelength.

15.2.2.4. Output power.

15.2.2.5. Mode of operation.

15.2.2.6. Pulse duration (if applicable).

15.2.2.7. Beam diameter in millimeters or centimeters.

15.2.2.8. Beam divergence in radians.

15.2.2.9. Transverse electromagnetic modes (if applicable).

15.2.2.10. Pulse repetition rate.

15.2.2.11. List of operational personnel giving the last, first, and middle name, rank or civil service rating, and Social Security Number (SSN).

15.2.2.12. The maximum number of personnel required to participate in the operation.

15.3. Inspections of laser operations will be accomplished as follows:

15.3.1. The initial inspections are normally conducted by 75 AMDS/SGPB in conjunction with the laser safety officer and OO-ALC/SEG representative.

15.3.1.1. The 75 AMDS/SGPB Chief or designated alternate is the inspection leader and will ensure laser safety, as prescribed in *AFOSHSTD 161-10* and standards set by the Public Health Service, as required by *Public Law 90-602, Radiation Control for Health and Safety Act of 1968*.

15.3.1.2. OO-ALC/SEG or designated alternate will inspect for compliance with applicable

provisions of *AFOSHSTD 91-66, General Industrial Operations,* and other applicable safety regulations which may apply.

15.3.1.3. The on-site laser safety officer will accompany the inspectors and make notes as to the deficiencies found. This individual has the responsibility for ensuring compliance with safe operating procedures.

15.3.2. Laser operations will be surveyed annually per *AFOSHSTD 161-10.*

15.4. *MIL-STD-1425, Military Lasers and Associated Support Equipment,* and the *CFR Title 21, Food and Drug Administration,* must be used in procuring nonexempt and exempt lasers respectively.

15.5. Exempt lasers must be disposed of in accordance with *MIL-STD-1425.*

16. RF SAFETY PROCEDURES.

16.1. 75 AMDS/SGPB should assess each RF emitter during the industrial hygiene surveys. Emitters will be assigned a risk assessment rating (low, medium, or high) based on its hazard potential as defined by *AFOSHSTD 48-9.* The frequency of the surveys of RF emitters will be based on the risk assessment rating and will be at the discretion of the surveyor/industrial hygienist. The three main parts of the risk assessment include recognition, evaluation, and controls for RF emitters. Chapter 3 of *AFOSHSTD 48-9* explains in detail the requirements of the risk assessments. Attachment 4 of *AFOSHSTD 48-9* provides guidelines for performing RF power density measurements. *AF Form 2759, Radio Frequency Radiation Emitter Survey,* should be completed at the time of the survey. A copy of the completed *AF Form 2759* will be provided to Weapons Safety (OO-ALC/SEW) for electro-explosives hazard evaluations. The surveyor will obtain the following information from the supervisor of an area in which RF emitters are used:

16.2. Location and nomenclature.

16.2.1. Organization responsible for its use.

16.2.2. Function of the RF emitter.

16.2.3. Operating frequency (or frequencies).

16.2.4. Antenna gain.

16.2.5. Output power (state if average or peak).

16.2.6. Operating mode (continuous wave or pulsed).

16.2.7. Pulse repetition frequency and pulse width.

16.3. Supervisors will coordinate all modifications and additions to RF emitters with 75 AMDS/SGPB. Supervisors are responsible for ensuring their workers are aware of and follow the safety procedures outlined in *AFOSHSTD 48-9,* equipment technical manuals, and unit safety awareness training. Supervisors will review and implement their responsibilities as explained in *AFOSHSTD 48-9.*

17. CONSULTANT SERVICES.

17.1. 75 AMDS/SGPB is available to all base and tenant organizations for consultant services in the areas of ionizing and non-ionizing radiation hazards or problems.

17.2. 75 AMDS/SGPM will arrange training sessions in ionizing and non-ionizing radiation when requested in writing. Include the following in the request.

17.2.1. Type of radiation safety to be discussed.

17.2.2. Names, SSN, and rank or civil service grade of individuals to receive training.

18. RECORDS.

18.1. Radioactive materials records will be maintained as follows:

18.1.1. The owner, user, and 75 AMDS/SGPB will maintain records on all Air Force permits and on all materials licenses, as required by the *CFR, Title 10* and *AFI 37-138, Records Disposition - Procedures and Responsibilities*.

18.1.2. The records will have the specific radioisotope, date of original activity, serial number and log number, physical (solid, scaled, liquid, or plated) amount of original activity; and, if a liquid, the volume and concentration.

18.2. For machines producing ionizing radiation:

18.2.1. 75 AMDS/SGPB will maintain records on all machines producing ionizing radiation. The standards for such machines are set by *Public Law 90-602*.

18.2.2. Records will contain the name of the machine, manufacturer, model number, serial and log number, radiation produced, energy or energy range, location, and date surveyed. If the machine is moved to a new location, another inspection record is required by 75 AMDS/SGPB. The move will be coordinated with 75 AMDS/SGPB.

18.3. For machines producing non-ionizing radiation:

18.3.1. The users and 75 AMDS/SGPB will maintain records on all machines producing non-ionizing radiation that may be hazardous to personnel.

18.3.2. The information required in paragraphs 15.2.2. and 16.1. of this instruction will be posted in records maintained by 75 AMDS/SGPB.

18.4. The personnel exposure records will be kept on *AF Form 1527, History of Occupational Exposure to Ionizing Radiation.* 75 AMDS/SGPB will investigate over-exposures or personnel with exposures approaching the allowable limits.

18.5. 75 AMDS/SGPB will maintain records of routine surveys.

18.6. Area supervisors are responsible for keeping waste disposal records on the contents of radioactive wastes accumulating within their areas. These records will include the isotope identity, estimated activity, radiation level at surface of container, and the instrument used to determine surface radiation level.

LOUIS D. ELDREDGE, Lt Col, USAF, MC, SFS
Commander, 75th Aerospace Medicine Squadron

Attachment 1

RADIATION PROTECTION REFERENCES

The following directives have been used in assigning responsibilities in the radiation protection program:

AFPD 48-1, Aerospace Medical Program.

AFI 37-132, Air Force Privacy Act Program.

AFI 37-138, Records Disposition—Procedures and Responsibilities.

AFMAN 37-139, Records Disposition Schedule.

AFI 40-201, Managing Radioactive Materials in the USAF.

AFI 48-125, US Air Force Personnel Dosimetry Program.

AFI 91-202, The US Air Force Mishap Prevention Program.

AFI 91-204, Investigating and Reporting Mishaps.

AFOSHSTD 48-9, Radio Frequency Radiation (RFR) Safety Program.

AFOSHSTD 91-66, General Industrial Operations.

AFOSHSTD 161-10, Health Hazards Control for Laser Radiation.

AFI 48-145, Occupational Health Program

MIL-STD-1425, Military Lasers and Associated Support Equipment.

Public Law 90-602, Radiation Control for Health and Safety Act of 1968.

Code of Federal Regulations Titles 10, 21, and 49.

TO 00-110N-2, Radioactive Waste Disposal.

TO 00-110N-3, Requisition, Handling, Storage, and Identification of Radioactive Material.

Attachment 2

COORDINATION LETTER SAMPLE

MEMORANDUM FOR 75 AMDS/SGPB (Base Radiation Safety Officer)

FROM:

SUBJECT: Occupational Ionizing Radiation Exposure of Fertile Women

1. I have received a copy and have read the paper, "Possible Health Risks to Children of Women Who Are Exposed to Radiation During Pregnancy."

2. I have been briefed on the Air Force's policy concerning women being occupationally exposed to ionizing radiation.

3. I understand that should I choose to declare my pregnancy, it is my responsibility to immediately notify my supervisor so that medical personnel can determine if reassignment to other duties is appropriate.

_____

Signature and date

_____

Please print name, office symbol and telephone number

1st Ind/

TO: 75 AMDS/SGPB

1. I understand it is my responsibility to insure the above referenced individual contacts 75 AMDS/SGPB (78148/74551) immediately if she suspects she is pregnant.

2. I also understand she must be immediately removed from all ionizing radiation work until a medical evaluation can be performed. If it is determined she can return to duties, I will insure she is on the personnel radiation dosimetry program and wears her TLD badge at all times when around ionizing radiation.

_____

Supervisor's signature and date

_____

Please print name, office symbol and telephone number

cc: Individual’s Supervisor

Attachment 3

POSSIBLE HEALTH RISKS TO CHILDREN OF WOMEN WHO ARE EXPOSED TO IONIZING RADIATION DURING PREGNANCY

General

Radiation can be classified as ionizing or non-ionizing. Non-ionizing radiation covers a large portion of the energy frequency spectrum and includes radio waves, microwaves, light, ultraviolet, infrared, etc. On the other hand, ionizing radiation covers the frequency spectrum greater than non-ionizing radiation. Ionizing radiation is basically that radiation capable of producing ions directly or indirectly by interaction with matter. It is this ion formation interaction with matter, (cells of the body), that is the basis for the Air Force's concern about ionizing radiation exposure of its employees and the public in general. This article will be concerned only with ionizing radiation. Whenever the term radiation is used, it is understood to mean ionizing radiation and not non-ionizing radiation.

The amount of ionizing radiation an object receives is called a "dose" and is measured in "rads," a unit of measure for radiation absorbed dose. The roentgen-equivalent-man (rem) is a measure of biological effectiveness due to the radiation dose a human receives. All people receive some background radiation from nature, regardless of what they do. Natural background radiation levels vary from one part of the world to another and across the United States. A dose of one rem may be received on the beach at Guarapari, Brazil in nine days, while some people in Kerala, India can receive a dose of one rem every five months. A person working eight hours a day near a granite wall at the Redcap Stand in Grand Central Station, New York City, can receive 0.2 rem annually, while in Colorado, Wyoming and South Dakota, the average person can receive one rem every eight years from cosmic radiation.

Routine radiation exposure is not limited to background. It can be received from consumer products such as television and glow-in-the-dark watches. It can even be received from air travel. The average annual dose in the United States from televisions, consumer products and air travel is 0.0026 rem. Many people also receive radiation for medical reasons. The annual radiation dose averaged over the United States population from diagnostic x-rays is 0.045 rem per year. The average dose for one chest x-ray is also 0.045 rem.

Radiation, like many things, can be harmful. A large dose to the whole body (such as 600 rads in one day) would probably cause death in about 30 days, but such large doses result only from rare accidents. Control of exposure to radiation is based on the assumption that any exposure, no matter how small, involves some risk. The occupational exposure limits are set so low that medical evidence gathered over the past 50 years indicates no clinically observable injuries to individuals due to radiation exposures when the established radiation limits are not exceeded. This was true even for exposures received under the early occupational exposure limits, which were many times higher than the present limits. Thus, the risk to individuals at the occupational exposure levels is considered to be very low. However, it is impossible to say that the risk is zero. To decrease the risk still further, supervisors are expected to keep actual exposures as far below the limit as practicable.

The current exposure limits for people working with radiation have been developed and carefully reviewed by nationally and internationally recognized groups of scientists. It must be remembered, however, that these limits are for adults. Limits for people less than 18 years of age are ten percent of the limits for adults. Special consideration is appropriate when the person being exposed is, or may be, an expectant mother, because the exposure of an unborn child may also be involved.

The prediction that an unborn child would be more sensitive to radiation than an adult is supported by observations for relatively large doses. Large doses delivered before birth alter both physical development and behavior in experimentally exposed animals. A report of the National Academy of Sciences states that short-term doses, in the range of 10 to 20 rems, cause subtle changes in the nerve cells of unborn and infant rats. The report also states that no radiation induced changes in development have been demonstrated in experimental animals from doses up to about 1 rem per day extended over a large part of the period before birth.

The National Academy of Science also noted that doses of 25 to 50 rems to a pregnant human may cause growth disturbances in her offspring. Such doses substantially exceed, of course, the maximum permissible occupational exposure limits.

Concern about prenatal exposure, i e., exposure of a child while in its mother's uterus, at the permissible occupational levels is primarily based on the possibility that cancer, especially leukemia, may develop during the first ten years of the child's life. Several studies have been performed to evaluate this risk. One study involved the follow-up of 77,000 children exposed to radiation before birth (because of diagnostic abdominal x-rays made for medical purposes during their mother's pregnancy). Another study involved the follow-up of 20,000 such children. In addition, 1292 children who received prenatal exposure during the bombing of Hiroshima and Nagasaki were studied. Although contradictory results have been obtained, most of the evidence suggests a relationship between prenatal exposure and an increased risk of childhood cancer.

Current Thought and Policy

Some recent studies have shown that the risk of leukemia and other cancers in children increases if the mother is exposed to a significant amount of radiation during pregnancy. According to a report by the National Academy of Sciences, the incidence of leukemia among children under 10 years of age in the United States could rise from 3.7 cases in 10,000 children to 6.6 cases in 10,000 children if the children were exposed to 1 rem of radiation before birth. The Academy has also estimated that an equal number of other types of cancers could result from this level of radiation. Although other scientific studies have shown a much smaller effect from radiation, the Air Force wants women employees to be aware of any possible risk, so that the women can take steps they think appropriate to protect their offspring.

As a radiation worker, you may be exposed to more radiation than the general public. The Air Force has established a basic exposure limit for all occupationally exposed adults of 5.0 rems in any one year. No clinical evidence of harm would be expected in an adult working within these levels for a lifetime.

Because the risks of undesirable effects may be greater for young people, persons under 18 years of age are permitted to be exposed to only 10 percent of the adult occupational limits.

The scientific organization called the National Council on Radiation Protection and Measurements (NCRP) has recommended that pregnant females should not exceed 0.5 rem during their pregnancy because the fetus may be more sensitive to radiation than adults. Other scientific groups, including the International Commission on Radiation Protection, have also stressed the need to keep radiation doses to unborn children as low as practicable.

All Air Force supervisors and NRC licensees are now required, by 10 CFR Part 19, to inform all individuals who work in a restricted area of the health protection problems associated with radiation exposure. This instruction would, in many cases, include information on the possible risks to unborn babies. 10 CFR Part 20, states that licensees should keep radiation exposure as low as practicable. According to the National Council on Radiation Protection and Measurements, particular efforts should be made to keep the radiation exposure of an embryo or fetus at the very lowest practical level during the entire period of pregnancy.

It is therefore, Air Force policy for the Base RSO to evaluate a pregnant female's specific duties involving exposure to radiation. This evaluation will include consideration of the work place and the source of radiation, the individuals past history of exposure to radiation as documented by personal dosimetry records, current radiation measurements applicable to her specific tasks, current exposure histories of co-workers, and likely exposures which would be incurred in event of a credible accident.

If the RSO determines that it is unlikely that the woman would receive a total exposure in excess of 0.5 rem during the term of the pregnancy (including the period preceding confirmation of the pregnancy) then she can continue in her radiation duties.

Should the RSO determine it is likely that the worker would receive a total whole body dose during pregnancy exceeding 0.5 rem, then the individual must be restricted from those specific duties contributing to significant exposures. This may result in total removal from radiation duties (such as performing industrial radiography) or only partial removal (i.e. constraining medical x-ray technicians to limited diagnostic procedures not involving fluoroscopy, etc.).

Special consideration must be made when a pregnant worker's radiation duties involve the use of radioactive materials other than in sealed sources, or the operation of high output sources such as industrial radiography, medical therapy, etc. Pregnant workers will not continue in duties involving these sources without specific approval of HQ AFMOA/SGPA.

The following facts should be noted:

1. The first three months of pregnancy are the most important so you should act quickly when you suspect pregnancy.

2. At the present occupational exposure limit, the actual risk to the unborn baby is small, but experts disagree on the exact amount of risk.

3. There is no need to be concerned about sterility or loss of your ability to bear children. The radiation dose required to produce such effects is more than 100 times larger than the Nuclear Regulatory Commission's dose limits for adults.

4. It is important to remember that the 0.5 rem applies to the full nine month pregnancy and not for any shorter duration.

Summary

Occupational exposures to radiation are being kept low. However, qualified scientists have recommended that the radiation dose to a pregnant woman should not exceed 0.5 rem because of possible risks to her unborn child. Since this 0.5 rem is lower than the dose generally permitted to adult workers, women should take special actions to avoid receiving higher exposures, just as they might stop smoking during pregnancy or might climb stairs more carefully to reduce possible risks to their unborn children.

Attachment 4

POINT OF CONTACT FOR RADIOACTIVE MATERIALS

Defense Depot Hill Utah (DDHU) Bldg 845, 849

DDHU-XA - Radiation Protection Officer (RPO) and Alternate RPO (ARPO)

75 Air Base Wing/Logistics (75 ABW/LGS) Bldg 830, Bay B and D

LGS (Chief, Supply Division)

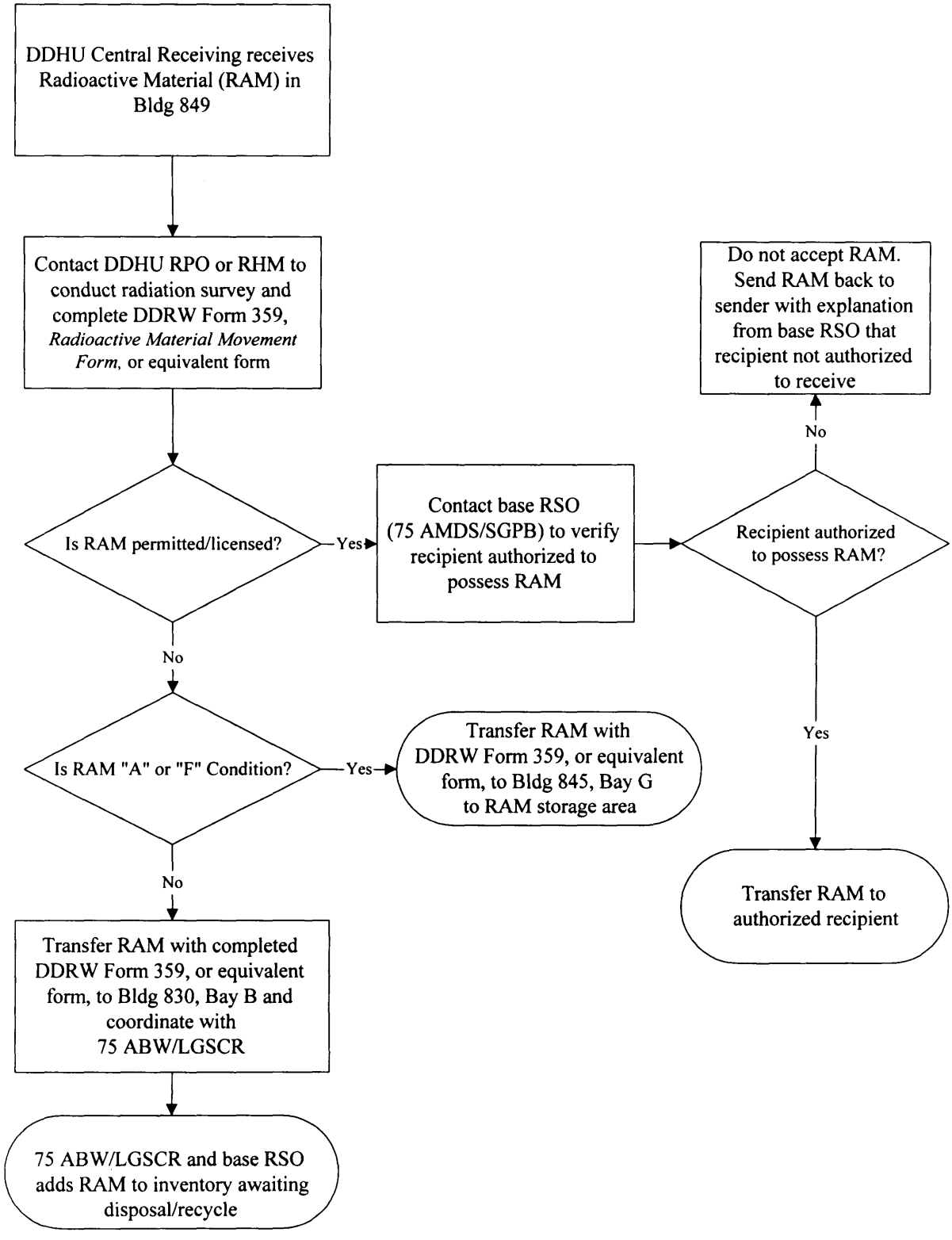
LGSCR (Recycle Repair)

75 Aerospace Medicine Squadron/Bioenvironmental Engineering Flight (75 AMDS/SGPB) Bldg 249

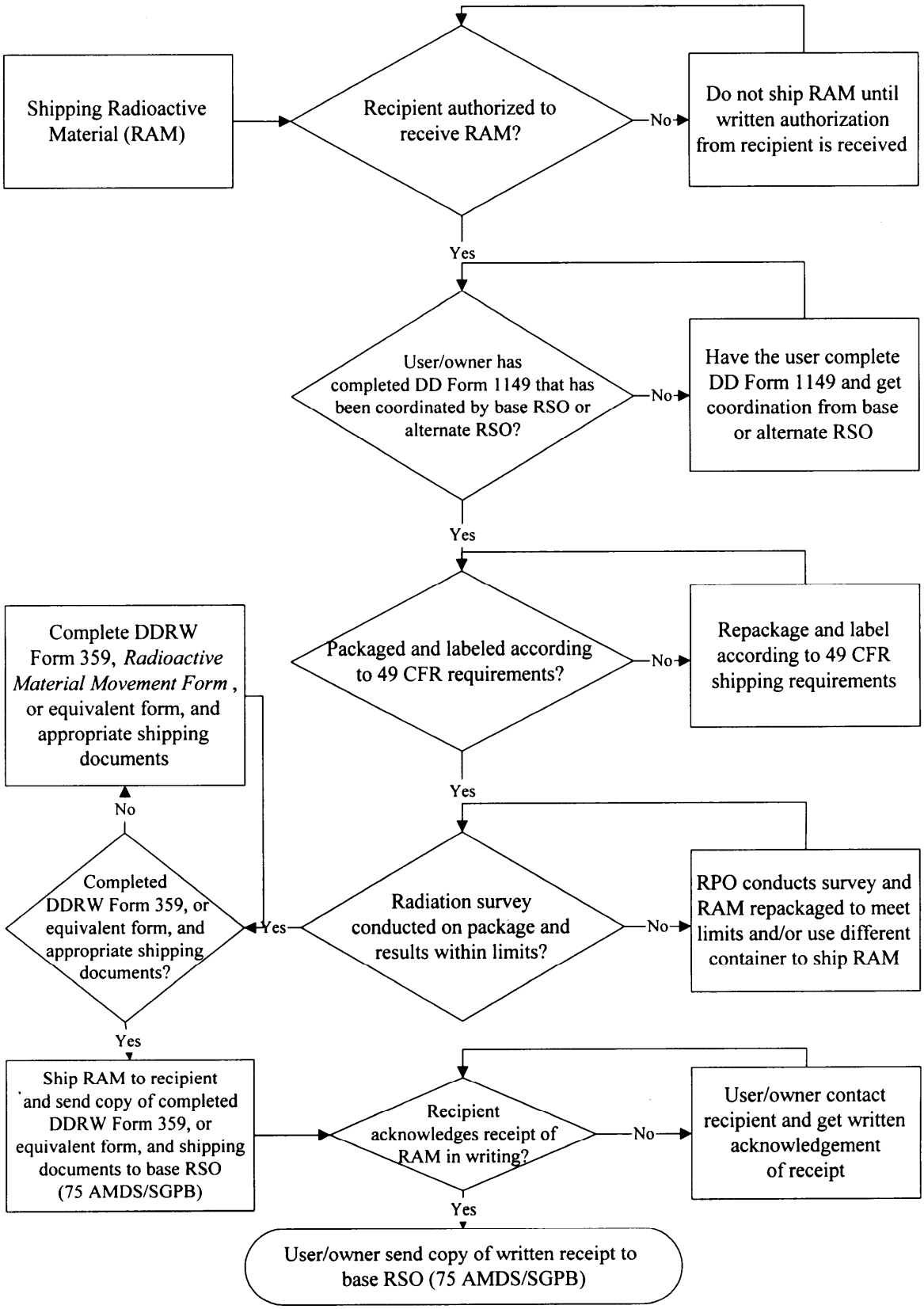
Base Radiation Safety Officer (RSO) and Alternate RSO

*Note: The Radiation Protection Officer (RPO) and alternate RPO from the Defense Depot Hill Utah (DDHU) are responsible for oversight of the radiation safety program at the DDHU facilities. Whereas the Radiation Safety Officer (RSO) and alternate RSO from 75th Medical Group, Bioenvironmental Engineering, are responsible for oversight of the overall base radiation safety program. Together, the DDHU RPOs and base RSOs work to provide radiation safety guidance and enforce standards and regulations to ensure protection of workers and the public from overexposures to radiation at Hill AFB and affiliated organizations.

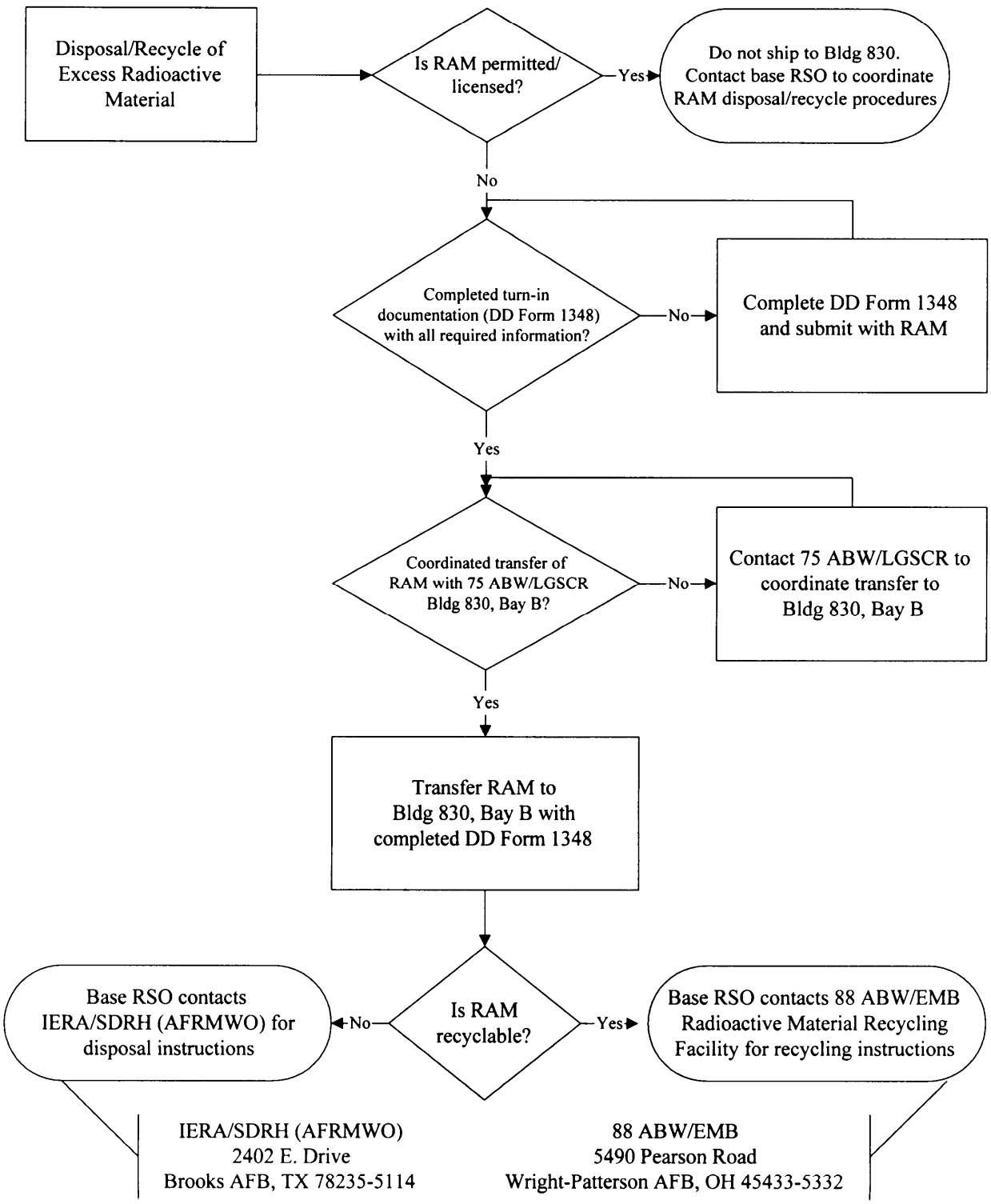
Attachment 5
RECEIPT OF RADIOACTIVE MATERIAL (RAM)



Attachment 6
SHIPMENT OF RADIOACTIVE MATERIAL (RAM)



Attachment 7
DISPOSAL/RECYCLE OF RADIOACTIVE MATERIALS (RAM)
(SOURCES FROM ON-BASE OWNERS/USERS)



Attachment 8
DISPOSAL/RECYCLE OF RADIOACTIVE MATERIALS (RAM)
(SOURCES FROM OFF-BASE)